4.R.5 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. In a trinomial such as $x^2 - 5x + 4$, one would need to find two factors of 4 whose sum is negative 5.

2. In factoring a trinomial with leading coefficient 1, if the constant term is negative, then both factors must be negative.

3. The first step in factoring a trinomial is to look for a common monomial factor.

4. For a trinomial with leading coefficient 1, if no pair exists whose product is the constant and whose sum is the middle term's coefficient, then the trinomial is not factorable.

Practice

Completely factor each trinomial. If a trinomial cannot be factored, write "not factorable."

5. $x^2 - 6x - 27$

6. $a^2 + a + 2$

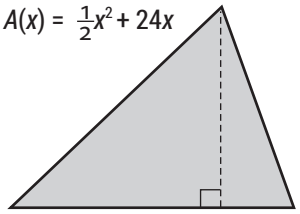
7. $y^2 - 14y + 24$

8. $2a^4 + 24a^3 + 54a^2$

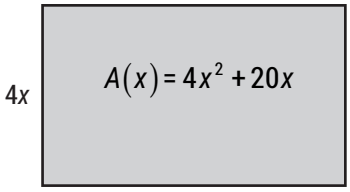
Applications

Solve.

9. ***Triangles:*** The area of a triangle is $\frac{1}{2}$ the product of its base and its height. If the area of the triangle shown is given by the function $A(x) = \frac{1}{2}x^2 + 24x$, find representations for the lengths of its base and its height (where the base is longer than the height).



10. ***Rectangles:*** The area of the rectangle shown is given by the polynomial function $A(x) = 4x^2 + 20x$. If the width of the rectangle is $4x$, what is the length?



Writing & Thinking

11. Discuss, in your own words, how the sign of the constant term determines what signs will be used in the factors when factoring trinomials.